

CLAIMS

1. A process for the production of niobium monoxide powder with leakage current in the range of from 0.2 to 0.5 nA/CV, characterized by  
5 comprising two reduction steps of niobium oxide, the first step comprises reducing by hydrogen of niobium pentoxide to niobium dioxide, and the second step comprises reducing niobium dioxide to niobium monoxide, by using an oxygen getter material and in an atmosphere which allows the transfer of the oxygen atoms from the niobium dioxide to the getter material, wherein the getter material may be  
10 a refractory metal or reactive metal or a refractory metal or a reactive metal hydride.

2. A process for the production of a powder of niobium monoxide, according to claim 1 characterized in that the first reducing step is conducted at a temperature between 700°C and 1500°C, and preferably between 800°C and 1200°C, for periods of time varying from 15 to 300 minutes, and  
15 preferably between 30 and 180 minutes.

3. A process for the production of niobium monoxide powder, according to claim 1, characterized in that the first reduction step is conducted in an atmosphere of hydrogen gas or a combination of hydrogen gas and other inert gasses at various ratios, such as, argon, helium and nitrogen.

20 4. A process for the production of niobium monoxide powder, according to claim 1, characterized in that the first reduction step is conducted in an atmosphere of carbon monoxide or any other gas or gaseous mixture having an adequate reducing potential.

5. A process for the production of niobium monoxide powder, according to claim 1 characterized by producing in the first reducing step the  
25 niobium dioxide with a microporous structure, with a specific surface area between 0.5 m<sup>2</sup>/g to 20 m<sup>2</sup>/g.

according to claim 1, characterized in that the atmosphere of the second reduction step is comprised of hydrogen gas and nitrogen in such a way that allows the nitrogen doping of the formed niobium monoxide.

14. A process for the production of niobium monoxide powder,  
5 according to claim 1, characterized in that the second reduction step is conducted at a temperature between 1000°C and 1700°C, and preferably between 1200°C and 1600°C, for periods of time between 10 minutes and 720 minutes, and preferably between 30 minutes and 360 minutes.

15. A process for the production of niobium monoxide powder,  
10 according to claim 1, characterized in that the niobium monoxide that is produced does not contain detectable residual amounts of niobium dioxide or metallic niobium by X-ray diffraction.

16. A process for the production of niobium monoxide powder,  
15 according to claim 1, characterized in that the niobium monoxide is produced in the second reducing step has similar morphology of the niobium dioxide.

17. A process for the production of niobium monoxide powder,  
according to claim 1, characterized in that the niobium monoxide produced in the second reaction step has an atomic ratio between niobium and oxygen between 1:0.6 e 1:1.5 and preferably an atomic ratio between niobium and  
20 oxygen between 1:0.7 and 1:1.1.

18. Niobium monoxide obtained in accordance with claim 1,  
characterized by having a leakage current in the range of from 0.2 to 0.5 nA/CV.

19. Capacitor manufactured with niobium monoxide according to  
25 claim 18, characterized by having a capacitance between 50,000 CV/g and 200,000 CV/g.

BEST AVAILABLE COPY

AMENDED SHEET

Empf.zeit:26/10/2005 13:29

EMPT.Nr.: 860 P.003